

In re ANINDYA CHAKRABORTY, Application No. 09/813,576
312 Amendment C

Amendments to the Claims:

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (canceled)

Claim 2 (previously presented): The method of claim 14, wherein the first database is associated with an active device and the second database is associated with a standby device.

Claim 3 (original): The method of claim 2, wherein said bulk updating occurs only during a booting or reconciliation phase of the standby controller.

Claim 4 (original): The method of claim 2, wherein the bulk updating includes sending a plurality of bulk update messages from the active device to the standby device.

Claim 5 (original): The method of claim 2, wherein the transactional updating includes sending a transaction update message from the active device to the standby device.

Claim 6 (canceled)

Claim 7 (previously presented): The method of claim 14, wherein the first database is associated with an active device and the second database is associated with a standby device; the bulk updating includes sending a plurality of bulk update messages from the active device to the standby device; and one of the plurality of bulk update messages includes a particular plurality of the plurality of entries belonging to a single one of the plurality of groups.

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Claim 8 (previously presented): The method of claim 14, wherein the first database is associated with an active device and the second database is associated with a standby device; the bulk updating includes sending a plurality of bulk update messages from the active device to the standby device; and one of the plurality of bulk update messages includes entries from at least two of the plurality of groups.

Claim 9 (previously presented): The method of claim 14, wherein the first database is associated with an active controller of a switching system, and the second database is associated with a standby controller of the switching system.

Claim 10 (original): The method of claim 9, wherein said bulk updating occurs only during a booting or reconciliation phase of the standby controller.

Claim 11 (previously presented): The method of claim 14, further including maintaining an indication of whether the second database needs updating with a particular entry of the plurality of entries.

Claims 12-13 (canceled)

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Claim 14 (previously presented): A method for duplicating a plurality of entries of a first database to a second database and maintaining said entries in synchronization between the first database and second database using a combined bulk and transactional update scheme, wherein bulk updating refers to the initial updating of the second database with sets of multiple entries from the first database and transactional updating refers to the updating of entries as they are applied to the first database to the second database for entries that are no longer subject to said initial bulk updating, wherein said updating of the second database includes committing the entry or entries to the second database; the method comprising:

initializing each of a plurality of groups of said entries as requiring bulk updating prior to commencing updating of the second database with said entries, wherein, at least one of said groups of entries includes a plurality of said entries, and each of said entries are included in one of said groups; wherein said groups are associated with indications identifying which groups still require said bulk updating; wherein said initializing includes initializing said indications to identify that all of the groups of entries still require said bulk updating; and after said initializing, systematically bulk updating entries from each of the plurality of groups until all groups are identified as no longer requiring said bulk updating; wherein said indications are updated to reflect which groups still require said bulk updating; and

receiving a new request prior to said identification that all groups no longer require bulk updating, and in response: updating the first database based on the new request, and determining whether or not a particular group of entries of said groups of entries to which said new request corresponds still requires bulk updating in order to determine whether to transactional update the second database with the new request or to allow said systematic bulk updating to update the second database with the new request.

Claims 15-21 (canceled)

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Claim 22 (original): The method of claim 14, further comprising receiving a transaction acknowledgement message for the particular group of entries; and updating the indication for the particular group of entries to reflect that the particular group of entries is not subject to the bulk update technique.

Claims 23-25 (canceled)

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Claim 26 (previously presented): One or more computer-readable media containing computer-executable instructions for performing operations for duplicating a plurality of entries of a first database to a second database and maintaining said entries in synchronization between the first database and second database using a combined bulk and transactional update scheme, wherein bulk updating refers to the initial updating of the second database with sets of multiple entries from the first database and transactional updating refers to the updating of entries as they are applied to the first database to the second database for entries that are no longer subject to said initial bulk updating, wherein said updating of the second database includes committing the entry or entries to the second database; said operations comprising:

initializing each of a plurality of groups of said entries as requiring bulk updating prior to commencing updating of the second database with said entries, wherein, at least one of said groups of entries includes a plurality of said entries, and each of said entries are included in one of said groups; wherein said groups are associated with indications identifying which groups still require said bulk updating; wherein said initializing includes initializing said indications to identify that all of the groups of entries still require said bulk updating; and after said initializing, systematically bulk updating entries from each of the plurality of groups until all groups are identified as no longer requiring said bulk updating; wherein said indications are updated to reflect which groups still require said bulk updating; and

receiving a new request prior to said identification that all groups no longer require bulk updating, and in response: updating the first database based on the new request, and determining whether or not a particular group of entries of said groups of entries to which said new request corresponds still requires bulk updating in order to determine whether to transactional update the second database with the new request or to allow said systematic bulk updating to update the second database with the new request.

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Claims 27-28 (canceled)

Claim 29 (previously presented): A system for duplicating a plurality of entries of an active database to a second database and maintaining said entries in synchronization between the active database and second database using a combined bulk and transactional synchronization scheme, wherein bulk synchronization refers to the initial updating of the second database with sets of multiple entries from the active database and transactional synchronization refers to the updating of entries as they are applied to the active database to the second database for entries that are no longer subject to said initial bulk synchronization, wherein said updating of the second database includes committing the entry or entries to the second database, the system comprising:

an active controller including:

the active database further comprising an indication of which of the plurality of entries require bulk synchronization, wherein said indication is initialized to reflect that all of said entries require bulk synchronization prior to commencement of said bulk synchronization;

an active controller bulk updater to compose a plurality of bulk update messages for communicating the plurality of entries indicated as requiring bulk synchronization to the standby controller; and

an active controller transactional updater to compose a plurality of transactional update messages prior to the indication indicating that none of the plurality of entries still requires bulk synchronization;

wherein a new request received prior to identifying that none of the plurality of entries still requires bulk synchronization is forwarded to the standby controller by the active controller bulk updater if the new request corresponds to an entry identified as still requiring bulk synchronization else by the transactional updater; and

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a standby controller including:

a second database; and

a standby database updater to receive the plurality of bulk update messages from the active controller, to extract the group of the plurality of entries from the received bulk update messages, and to update the second database with the plurality of entries.

Claim 30 (original): The system of claim 29, wherein the standby controller further includes a standby database transactional updater to receive the plurality of transactional update messages and to update the second database.

Claim 31 (original): The system of claim 29, wherein the standby database updater further receives the plurality of transactional update messages and updates the second database.

Claim 32 (previously presented): The system of claim 29, wherein the active controller transactional updater further comprises a second plurality of transactional update messages after the indication indicating that none of the plurality of entries requires bulk synchronization.

Claims 33-34 (canceled)

Claim 35 (previously presented): The method of claim 14, wherein the particular group of entries is subject to the bulk update technique if at least one entry of the particular group of entries remains subject to the bulk update technique

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Claim 36 (previously presented): An apparatus including means for duplicating a plurality of entries of a first database to a second database and maintaining said entries in synchronization between the first database and second database using a combined bulk and transactional update scheme, wherein bulk updating refers to the initial updating of the second database with sets of multiple entries from the first database and transactional updating refers to the updating of entries as they are applied to the first database to the second database for entries that are no longer subject to said initial bulk updating, wherein said updating of the second database includes committing the entry or entries to the second database; wherein said means for duplicating and maintaining said entries includes:

means for initializing each of a plurality of groups of said entries as requiring bulk updating prior to commencing updating of the second database with said entries, wherein, at least one of said groups of entries includes a plurality of said entries, and each of said entries are included in one of said groups; wherein said groups are associated with indications identifying which groups still require said bulk updating; wherein said initializing includes initializing said indications to identify that all of the groups of entries still require said bulk updating;

means for systematically bulk updating entries from each of the plurality of groups until all groups are identified as no longer requiring said bulk updating; wherein said indications are updated to reflect which groups still require said bulk updating; and

means for updating the first database based on a new request received prior to said identification that all groups no longer require bulk updating, said means for updating the first database based on the new request including means for determining whether or not a particular group of entries of said groups of entries to which said new request corresponds still requires bulk updating in order to determine whether to transactional update the second database with the new request or to allow said systematic bulk updating to update the second database with the new request.

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Claim 37 (currently amended): The apparatus of ~~claim 14~~ claim 36, comprising means for updating said indications to reflect that a completed bulk updated particular group of said groups does not still require said bulk updating in response to is not subject to the bulk update technique in response to receiving a transaction acknowledgement message for the completed bulk updated particular group.

Claim 38 (previously presented): The computer-readable media of claim 26, wherein said operations further comprise updating the indication for the particular group of entries to reflect that the particular group of entries is not subject to the bulk update technique in response to receiving a transaction acknowledgement message for the particular group of entries.